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Europäisches  
Patentamt

European  
Patent Office

Office européen  
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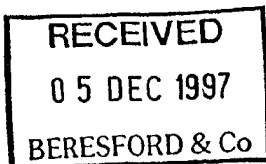
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Application No./Patent No. 95306444.1-2208	Ref. 2390830	09.12.97
Applicant/Proprietor CANON KABUSHIKI KAISHA		

### Communication pursuant to Article 96(2) and Rule 51(2) EPC

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(1) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable to correct the indicated deficiencies within a **period**

of 4 months

from the notification of this communication, this period being computed in accordance with Rules 78(3) and 83(2) and (4) EPC.

Amendments to the description, claims and drawings are to be filed where appropriate within the said period in **three copies** on separate sheets (Rule 36(1) EPC).

**Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Article 96(3) EPC).**



G. Van den Berg  
Primary examiner  
for the Examining Division

Enclosures: 6 page/s reasons (Form 2906)

EP-A-0 351 203, EP-A-0 291 221, EP-A-0 282 286, EP-A-0 281 474

Registered letter

EPO Form 2906 1-10-96

3/4/98 ✓  
16/12/97 ✓



Beschaid/Pr (Anlage)

Datum  
Date  
Date

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Communication/Minutes (Annex)

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Notification/Procès-verbal (Annexe)

Anmelde-Nr.:  
Application No.: 95 306 444.1  
Demande n°:

The examination is being carried out on the application documents as originally filed

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1. The following documents are referred to in this communication:

D1 = US-A-5 204 315

D2 = EP-A-O 555 971

D3 = FR-A-2 615 651

D4 = EP-A-O 351 203

D5 = EP-A-O 291 221

D6 = EP-A-O 282 286

D7 = EP-A-O 281 474

Documents D1 - D3 are cited from the European Search report. D4 - D7 are cited from the examiner's own knowledge (cf. Guidelines, C-VI, 8.9). Copies of D4 - D7 are annexed to the communication.

The numbering will be adhered to in the rest of the procedure.

2. The present application is directed to a superconductor wire and to a method of manufacturing such wire. Under Rule 46(1) EPC an objection under Article 82 EPC as to lack of unity was put forward by the Search Division with regard to the claims defining that subject-matter. The



Bescheid/II (Anlage)

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Communication/Minutes (Annex)

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Anmelde-Nr.:  
Application No.: 95 306 444.1  
Demande n°:

Examining Division however rather observes a lack of clarity of the independent claims (which may have revealed the objection under Article 82 EPC) and tends not to agree with the objection made under Article 82 EPC.

3. The application does not meet the requirements of Article 84 EPC:

3.1 It seems that none of the independent claims includes those features which are essential to the performance of the invention:

From the description, it becomes - in spite of the statement that a metal to be dispersed will do to realise the claimed wire - apparent that the metal to be dispersed in the superconductor material should be silver or silver alloy (cf. page 12, lines 8 - 14; page 14, lines 10 - 24; all embodiments). The content of claim 2 should therefore be transferred to claim 1. Furthermore, claim 1 lacks the decisive feature that the conductive material with which the "line" is to be coated should have a higher melting point than the metal to be dispersed in the superconductor material (cf. description, page 11, lines 9 - 24; page 25, line 25 - page 26, line 4). Apart from that the present wording does not prevent the "metallic" material to be dispersed in the superconductor and the conductive coating material from being the same material.

Generally, the application as a whole seems to be directed to copper containing oxide superconductor (cf. page 2, line 4 - page 5, line 10; pages 8, 9; embodiments). The word "dispersed" (cf. description, page 7, lines 6 - 10; page 11, lines 20 - 24) is lacking in claim 1. The wording



Bescheid/Decision II (Anlage)

Datum  
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03.12.97

Communication/Minutes (Annex)

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Sheet 3  
Feuille

Notification/Procès-verbal (Annexe)

Anmelde-Nr.:  
Application No.: 95 306 444.1  
Demande n°:

"electrically conductive" should be used instead of the vague term "conductive".

Since independent claim 1 does not contain these features it does not meet the requirement following from Article 84 taken in combination with Rules 29(1) and (3) EPC that any independent claim must contain all the technical features essential to the invention.

- 3.2 Due to vague wording the methods defined in claims 9 and 15 do not reveal a superconducting wire with Ag or Ag alloy dispersed therein and a conductive coating of a material having higher melting point than the dispersed material. At least the content of claims 14 and 21 should be transferred to claims 9 and 15, respectively.

Furthermore, the method should be defined in terms of the steps (rather than "processes") to be carried out in order to obtain the desired product.

In claim 15, the wording "A manufacturing method for the superconductor wire ..." is not clear. Apart from that, the term "a process for causing said materials to react ..." is vague.

- 3.3 The selection of coating materials in claim 3 also includes as conductive material Al which has a lower melting point than e.g. silver.

In claims 4 - 8, the wording "one type of element" is not clear.



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1 (Anlage)

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Communication/Minutes (Annex)

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Notification/Procès-verbal (Annexe)

Anmelde-Nr.:  
Application No.: 95 306 444.1  
Demande n°:

4. Due to the vague wording of the claims, the requirement of Articles 52(1) EPC is at present not met.

In view of the observations under Article 84 EPC, evaluation of the use claim 22 and device claim 23 under Article 52(1) EPC is not at present considered useful and herewith postponed.

In view of the considerable amount of deficiencies under Article 84 EPC, only a short evaluation under Article 52(1) with regard to the content of claims 1 - 21 is given (D1 - D3). Documents D4 - D7 are expected to be of relevance, once the claims will have been clarified to overcome the aforementioned objections under Article 84 EPC.

In D1, a superconductor wire is produced by preparing a mixture of silver (alloy) with a bonding agent and a superconductor mixture of superconductor with bonding agent, placing both in an extrusion die, heating the resulting wire consisting of a superconductor core and a silver coating (cf. e.g. column 2, lines 3 - 22).

D2 describes a process and the resulting products wherein oxide superconductors are melt processed within a silver sheath. The melting point of the precursor is less than that of the sheath (cf. abstract).

In D3 a metal tube is formed by drawing a metal pipe filled with materials for the oxide superconductor, heating the materials at a temperature higher than the melting point of the metal material constituting the metal pipe.

Consequently, the principle of how to fabricate a super-

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I (Anlage)Datum  
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Date

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Communication/Minutes (Annex)

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Notification/Procès-verbal (Annexe)

Anmelde-Nr.:  
Application No.: 95 306 444.1  
Demande n°:

conductor wire in accordance with present claims 9 and 15 is generally known from these documents.

D4 - D7 concern the case wherein the voids between superconductor material and the tubular metal sheath are sought to be avoided. The manufacturing methods described in these documents seem to result generally in a wire which might have metal dispersed in the superconductor to a certain extent, such that the wire according to the present application might not be distinguishable from a wire known from this prior art. It is therefore given into consideration to direct the new independent claim to the method disclosed in the underlying application.

5. It seems that pages 28 - 34 of the description represent a repetition of pages 17 - 22.
6. It is not at present apparent which part of the application could serve as a basis for a new, allowable claim. Should the applicant nevertheless regard some particular matter as patentable an independent claim including such matter should be filed taking account of Rule 29(1) EPC. The applicant should also indicate in the letter of reply the difference of the subject-matter of the new claim vis-à-vis the state of the art and the significance thereof.

The applicant is requested to file new claims which take account of the above comments.

Care should be taken not to add subject-matter which ex-



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Communication/Minutes (Annex)

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ification/Procès-verbal (Annexe)

Anmelde-Nr.:

Application No.: 95 306 444.1

Demande n°:

tends beyond the content of the application as originally filed (Article 123(2) EPC).

In the present case it seems recommendable to postpone the revision of the description until there is agreement upon an allowable set of claims.

The applicant is requested to clearly indicate with the letter of reply any amendments as well as the parts of the application as originally filed on which such amendments are based.



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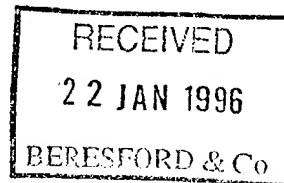
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Datum/Date

18.01.96

Zeichen/Ref/Réf. <b>2390830</b>	Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n° <b>95306444.1-2208/</b>
Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire <b>CANON KABUSHIKI KAISHA</b>	

### COMMUNICATION

The European Patent Office herewith transmits the partial European search report under Rule 46(1) EPC relating to the above-mentioned European patent application.

Copies of the documents cited in the search report are enclosed.

The applicant's attention is drawn to the following:

The Search Division informs the applicant that if the European search report is also to cover inventions other than the invention first mentioned in the claims, a further search fee must be paid for each of these inventions, within **ONE MONTH** after notification of this communication.

#### Note to users of the automatic debiting procedure:

Unless the EPO receives prior instructions to the contrary, the search fee(s) will be debited on the last day of the period for payment. For further details see the Arrangements for the automatic debiting procedure, Supplement to OJ EPO 06/1994.

☐ The abstract was modified by the Search Division and the definitive text is attached to the present communication.

☐ The Search Division considers that the present European patent application does not comply with the provisions of the European Patent Convention to such an extent that it is not possible to carry out a meaningful search into the state of the art on the basis of some of the claims.

Claims searched completely:

Claims searched incompletely:

Claims not searched:

Reason for the limitation of the search:

☒ Additional copy (copies) of the documents cited in the European search report.

#### REGISTERED LETTER

ENTERED BY	9
DUE	18/2/96
BRING-UP	18/2/96

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DUE	12/1/96
BRING-UP	30/1/96







European Patent  
Office

**PARTIAL EUROPEAN SEARCH REPORT**  
under Rule 46, paragraph 1 of the European Patent  
Convention

Application number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 95306444.1
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 6)
X	US - A - 5 204 315 (ITO et al.) * Abstract; claims; fig. 8B *	1-3, 22,23	H 01 B 12/00 H 01 L 39/12 H 01 L 39/24 C 04 B 35/50
Y	--	4-7	
Y	EP - A - 0 510 806 (CANON KABUSHIKI KAISHA) * Claims 1,12 *	4,5	
Y	EP - A - 0 576 284 (CANON KABUSHIKI KAISHA) * Claim 6 *	6	
Y	PHYSICA C, vol. 215, 1993 P.R. SLATER et al. "B03/3- -substitutions in phases related to YBa2Cu3O7. Superconducting properties of (Y,Ca) (Ba,Sr)2Cu3-z(B03)zOy" pages 191-194 * Abstract; experimental *	7	
X,D	PATENT ABSTRACTS OF JAPAN,	1-3,	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 6)
			H 01 B 12/00 H 01 L 39/00 C 04 B 35/00
<b>LACK OF UNITY OF INVENTION</b>			
The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:			
1.) Claims 1-8 and 22,23 (as related to claims 1-8): superconducting wire			
2.) Claims 9-21 and 22,23 (as related to claims 9-21): manufacturing methods for a superconducting wire			
The present partial European search report has been drawn up for those parts of the European patent: application which relate to the invention first mentioned in the claims.			
Place of search VIENNA		Date of completion of the search 14-12-1995	Examiner KUTZELNIGG
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			



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# PARTIAL EUROPEAN SEARCH REPORT

Application number

-2-

EP 95306444.1

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 6)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	unexamined applications, E field, vol. 14, no. 45, January 26, 1990 THE PATENT OFFICE JAPANESE GOVERNMENT page 62 E 880; & JP-A-01 276 516 (MITSUBISHI) -----	22,23	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 6)

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO. EP 95306444.1

This annex lists the patent family members relating to the patent documents cited in the above-mentioned search report.  
The members are as contained in the EPIDDS INPADOC file on 15.12.1995.  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US A 5204315	20-04-93	JP A2 4272616 US A 5374612	29-09-92 20-12-94
EP A2 510806	28-10-92	JP A2 5097435 EP A3 510806 JP A2 5078102	20-04-93 11-08-93 30-03-93
EP A1 576284	29-12-93	CA AA 2099224 JP A2 6263441	27-12-93 20-09-94

For more details about this annex see Official Journal of the European Patent Office, No. 12/82.



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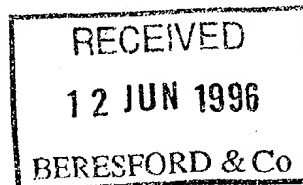
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Datum/Date

10.06.96

Zeichen/Ref/Ref  
2390830

Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°  
95306444.1-2208/

Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire  
CANON KABUSHIKI KAISHA

## COMMUNICATION

The European Patent Office herewith transmits

- ☒ the European search report
- ☐ the declaration under Rule 45 EPC
- ☐ the partial European search report under Rule 45 EPC
- ☐ the supplementary European search report concerning the international application under Article 157(2) EPC relating to the above-mentioned European patent application. Copies of the documents cited in the search report are enclosed.

The following specifications given by the applicant have been approved by the Search Division :

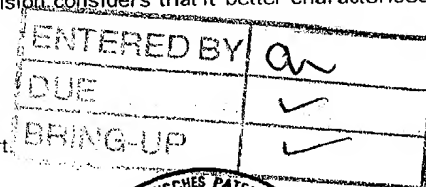
- ☒ Abstract
- ☒ Title
- ☒ Figure

- ☐ The abstract was modified by the Search Division and the definitive text is attached to this communication.

- ☐ The following figure will be published with the abstract, since the Search Division considers that it better characterises the invention than the one indicated by the applicant.

Figure:

- ☒ Additional copy(copies) of the documents cited in the European search report.



## REFUND OF THE SEARCH FEE

DE: 19/6/96

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.



16

EPO Form 1507 02.93




European Patent  
Office

# EUROPEAN SEARCH REPORT

Application number

## DOCUMENTS CONSIDERED TO BE RELEVANT

EP 95306444.1

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 6)
X	US - A - 5 204 315 (ITO et al.) * Abstract; claims; fig. 8B *	1-3 22,23	H 01 B 12/00 H 01 L 39/12 H 01 L 39/24 C 04 B 35/50
Y	* Abstract; claims; fig. 8B; column 3, line 3 - column 4, line 9 *	4-7, 10,12, 17,19	
Y	EP - A - 0 510 806 (CANON KABUSHIKI KAISHA) * Claims 1,12 *	4,5	
Y	EP - A - 0 576 284 (CANON KABUSHIKI KAISHA) * Claim 6 *	6	
Y	PHYSICA C, vol. 215, 1993 P.R. SLATER et al. "B03/3-substitutions in phases related to YBa2Cu3O7. Super- conducting properties of (Y,Ca) (Ba,Sr) 2Cu3-z(B03)zOy" pages 191-194 *Abstract; experimental *	7	TECHNICAL FIELDS SEARCHED (Int. Cl. 6)  H 01 B 12/00 H 01 L 39/00 C 04 B 35/00
X,D	PATENT ABSTRACTS OF JAPAN, unexamined applications, E field, vol. 14, no. 45, January 26, 1990 THE PATENT OFFICE JAPANESE GOVERNMENT page 62 E 880; & JP-A-01 276 516 (MITSUBISHI)	1-3, 22,23	
The present search report has been drawn up for all claims			

Place of search

VIENNA

Date of completion of the search

29-05-1996

Examiner

KUTZELNIGG

### CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone  
Y : particularly relevant if combined with another  
document of the same category  
A : technological background  
O : non-written disclosure  
P : intermediate document

T : theory or principle underlying the invention  
E : earlier patent document, but published on, or  
after the filing date  
D : document cited in the application  
L : document cited for other reasons

& : member of the same patent family, corresponding  
document



DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 6)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	FR - A - 2 615 651 (KABELMETAL ELECTRO GMBH) * Claims 1,8-10,18; fig. 1,2 *	9,11, 13,22, 23	
Y	* Claims 1,8-10,18; fig. 1,2 *	10,12	
X	EP - A - 0 555 971 (IBM) * Claims 8,9,12-14; column 6, line 8 - column 7, line 52 *	15,16, 18,20, 22,23	
Y	* Claims 8,9,12-14; column 6, line 8 - column 7, line 52 *	17,19	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl. 6)
Place of search VIENNA		Date of completion of the search 29-05-1996	Examiner KUTZELNIGG
<div>CATEGORY OF CITED DOCUMENTS</div> <div>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</div> <div>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</div>			

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO. EP 95306444.1**

This annex lists the patent family members relating to the patent documents cited in the above-mentioned search report.  
The members are as contained in the EPIDOS INPADOC file on 30. 5.1996.  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US A 5204315	20-04-93	JP A2 4272616 US A 5374612	29-09-92 20-12-94	✓ <i>CG RECORD</i>
EP A2 510806	28-10-92	JP A2 5097435 EP A3 510806 US A 5512538 JP A2 5078102	20-04-93 11-08-93 30-04-96 30-03-93	✓ <i>CG RECORD</i>
EP A1 576284	29-12-93	CA AA 2099224 JP A2 6263441	27-12-93 20-09-94	✓ <i>CG RECORD</i>
FR A1 2615651	25-11-88	DE A1 3730766 FR B1 2615651 JP A2 63308810 DE A1 3716815 SU A3 1590051	23-03-89 04-03-94 16-12-88 08-12-88 30-08-90	
EP A1 555971	18-08-93	JP A2 6040721	15-02-94	

For more details about this annex see Official Journal of the European Patent Office, No. 12/82.